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December 22, 1938.

CONTROL, R-4
Insect
(Annual Report)

Chief, Forest Service,

Washington, D. C.

Dear Sir:

The forest insect situation within Region 4 has been the subject of recent correspondence with your office and you have been previously informed as to our present plans for control work. Considerable time and thought has been given to the forest insect situation within the Region. Mr. James C. Evenden and Dr. J. A. Beal of the Bureau of Entomology and Plant Quarantine spent some time in the Region assisting personnel of the Regional Office and the field on the entomological phases of insect control work particularly. Insect control surveys were instituted where such surveys were needed to determine the extent and necessity of control work.

Mountain Pine Beetle (Dendroctonus monticolae):

The number of lodgepole pine trees within the Green River watershed recently attacked by the mountain pine beetle are approximately equal to that of 1937. However, the severity of attacks is much less than that of 1937, that is, some of the trees were lightly attacked and in some cases the beetles were entirely pitched out. Artificial control measures are undoubtedly responsible for the reduction in number of broods particularly in the lodgepole pine type proper. 3,742 trees were treated during the spring of 1938 within the Green River drainage on the Wyoming. As previously pointed out there is an active infestation of mountain pine beetle within the limber pine type which occurs for the most part along the ridgetops. The broods which are produced in the limber pine type reinfest beyond doubt the adjacent lodgepole pine stands. We did not conduct a survey within the limber pine type but indications are that the infestation within that type is declining. From general observations within the lodgepole pine type on the remainder of the Wyoming, Teton, Targhee, and Caribou, we have determined that a marked reduction has taken place in the number of sorrel tops and number of new attacks over previous years.

Copy for Mr. Beal

The Supervisor of the Challis reports that the mountain pine beetle is as yet quite active in the lodgepole pine stands within the Little Lost River drainage and the Supervisor of the Sawtooth reports some active work by this beetle. Both Supervisors, however, report a marked reduction over that of previous years. Such reduction on the latter two mentioned forests as well as the Idaho, Payette, Salmon, and Boise is no doubt due largely to the near exhaustion of host material. Close examination of the lodgepole pine stands on the Minidoka, Cache, Wasatch, Uinta and Ashley reveal an endemic condition insofar as the mountain pine beetle and/or Black Hills beetle work in the lodgepole pine is concerned. Intensive survey showed a few new attacks in the limber pine types on the Cache and past control work was followed up and a relatively small number of trees treated. It is quite apparent that there has been a marked reduction in the destructive work of the mountain pine beetle, and Black Hills beetle within the lodgepole pine types throughout the Region either naturally or through artificial control measures.

Black Hills Beetle (D. ponderosae).

The picture insofar as the work of the Black Hills beetle in ponderosa pine is concerned, is somewhat different than that in the lodgepole pine. However, we are not alarmed in regard to the infestation in the ponderosa pine type but we are convinced that artificial control measures are desirable where surveys show an increase in new attacks or a gradual building up over a period of years.

We are of the opinion that artificial control methods have been very effective on the Dixie, Powell and Ashley. The condition of the Dixie insofar as beetle work in ponderosa pine is concerned is very encouraging. Artificial control methods over the past several years have reduced this threatening infestation to an endemic stage. Systematic insect control surveys within the ponderosa pine type of the Dixie reveal only a few newly attacked trees and such new attacks were widely scattered. Some control work was done this fall within a few areas merely as a precautionary measure to prevent a further building up of the beetle population.

The Black Hills beetle infestation on the Powell, while not alarming, is as yet a problem. The insect control surveys covering slightly more than 250,000 acres of ponderosa pine, show at least three interesting points.

1. Artificial control procedure has been instrumental in the prevention of inter-unit spread of infestations as well as in checking a severe general epidemic.

2. Epidemic centers have already been located.

3. Natural control factors have this year been of immeasurable assistance in reducing the bark beetle broods.

In further explanation of point No. 2, it should be stated that some concern has been expressed by the members of the Bureau of Entomology and Plant Quarantine and also by the members of the Forest Service, that we did not have complete information as to the status of the infestation on the Powell Forest as a whole. In order to determine this point a complete survey of the ponderosa pine type was initiated and completed as outlined in the preceding paragraph. An analysis of the survey data indicates that approximately 4,000 trees should be treated. The trees to be treated are widely scattered, the number of newly attacked trees varying from six per section on units previously treated to 115 per section on units which have not been previously treated. We realize that the number of new attacks per section is relatively small but in our judgment it will be much more economical in the long run to bring the threatening epidemic under control by the treatment of the scattered trees. Our 1938 survey data showed the following additional information which may be of interest.

1. Attacks per square foot of bark surface three to seven as compared to five to ten last year.

2. The basal attacks were mostly incomplete and there are few branch attacks as compared with heavy branch attacks last year.

3. Attacks mostly in mature, overmature and decadent timber as compared to heavy attacks in immature timber last year.

4. General absence of Black Hills beetle on the Escalante district. Three trees found with only two attacks each of Black Hills beetle. Every tree found infested with other bark beetles was closely examined for evidence of Black Hills beetle. Only two attacks of Black Hills beetle were found in one such tree. The round-headed beetle appears to be the most numerous on the Escalante district and it was feared that perhaps the Black Hills beetle would increase in this same area or work conjointly with the round-headed beetle. (The Escalante district lies on the east side of the Powell and the ranger maintains his headquarters at Escalante.)

A strenuous effort will be put forward by the Division of Timber Management and local forest officers to bring the infestation within the ponderosa pine type on the Powell under control. Maps previously forwarded to your office indicate that the Black Hills population is centered about the upper East Fork of the Sevier River drainage. We hope to obtain complete coverage of this entire area or at least those portions which warrant treatment. We believe sufficient funds have been provided for this project. Infested trees will be disposed of by sale,

administrative use or otherwise where such a procedure is economically practicable. Precautionary measures will be taken to obtain satisfactory disposal of the slabs prior to flight of the beetle. Stumps will be peeled and the bark along with the remaining infested and unused portions of the tree will be treated by piling and burning. The Farm Security Administration has agreed to dispose of a number of infested trees in the Widtsoe district and an area on Horse Creek a few miles north of Widtsoe. A recent 100% spotting job in this drainage shows 835 trees to treat. By way of explanation it should be stated that officials of the Farm Security Administration have made available during the past two winters a number of relief workers for insect control and other work on the Powell Forest. WPA workers are employed during the remainder of the year on the nearby Widtsoe resettlement project.

Insect control work is now well under way on the Powell. It is planned, however, to curtail the work during the winter months with the thought that more effective and economical work can be accomplished during the early spring months, but some insect control work will be carried on throughout the winter months in order to take advantage of ERA and other relief labor. Our records show that 6,011 trees were treated on the Powell during the fall of 1937 and the spring of 1938.

The greater part of the proposed insect control project on the Ashley will be postponed until spring. A small part of the work was accomplished during the fall of 1938 with ERA and CCC funds. The Region has been allotted $750 P.& M. funds for control work within the ponderosa pine type on the Ashley. As pointed out in past correspondence the infestation of the Black Hills beetle on the Ashley is not alarming but seems to be slowly but consistently building up within the ponderosa pine type. Conditions have apparently been very favorable for the broods over the past five years at least and it seems advisable to combat such insects by artificial means in order to assure ourselves that all such infestations are held to an endemic stage. Surveys indicate that the Black Hills beetle infestation within the lodgepole pine and limber pine types is endemic.

By reference to last year's annual report and to Form FS-I.C.-1 for the Nevada National Forest, you will note that we have been doing some insect control work in the Charleston Mountain division. In reviewing our report Mr. Carter raised the question as to the high cost of treating per tree. At this time we desire to point out that most of the work on the Charleston Mountain division has been done through the State WPA director and by a transient camp located within the boundaries of the Charleston Mountain division. In the past the Forest Service has not had direct supervision of the relief workers but they have attempted to carry on the insect control work through a cooperative arrangement with

the WPA set-up. The work, although costly, has been carefully done and the district ranger or some other experienced employee has directed the field work. A close examination of this area was made by J. W. Farrell of the Division of Timber Management during the early part of May 1936 and as a result of this trip and upon request of the Forest Supervisor, Junior Forester Farmer made a trip to the Nevada this fall to study the infestation.

There has been some uncertainty regarding the identity of the bark beetles responsible for the infestation on the Nevada but the effectiveness of the 1937 and 1938 control has not been impaired because of this uncertainty. The proper control procedure has been followed for each of the beetles concerned.

Four different species of Dendroctonus beetles were found to be present in infested trees and the most serious of these has been the Black Hills beetle working thus far principally in limber pine and to a lesser extent in the ponderosa pine.

The round-headed beetle (D. convexifrons) and the southwestern pine beetle (D. barberi) are working conjointly in pure ponderosa pine type in the canyon bottoms. A number of broods of the turpentine beetle (D. valens) were discovered in logs cleared from road right-of-ways and in the bases of some newly attacked ponderosa pine trees. This beetle is considered the least important of those mentioned but it may be necessary to give more consideration to the damage from this beetle where clearings are made for road right-of-ways and where the adjoining standing trees are highly valuable for esthetic purposes. The Supervisor is cognisant of this problem and has taken action to dispose of logs cleared from the right-of-way so as to prevent the building up of these more or less secondary insects.

Charleston Mountain is a block mountain resulting from an uptilted fault in the earth's crust. Its limestone formation has been eroded into soil of sufficient depth to support some fine ponderosa pine stands in the bottoms of the large canyons that extend in every direction from the crest of the mountain. Smaller, more scrubby timber of the protection type comprises the mixed stands of white fir, limber pine and bristlecone pine and occur in the more shallow and more rocky soil characterizing the area that rises steeply from the canyon bottoms. Pure stands of bristlecone pine are found near the timber line at about 11,000 feet above sea level. Approximately 50,000 of the 65,000 acres within the forest boundaries are in ponderosa or limber pine type. The remaining areas next to the boundaries are in pinon-juniper type. The nearest other timber is on Sheep Mountain about 50 miles air line across the valley to the east. This area is not under Forest Service supervision, but according to Ranger Anderson who has done some cooperative timber marking there, it does contain some bark beetle infestation.

The timbered canyons on the east exposure of Charleston Mountain have a very heavy recreational use because they provide a nearby cool retreat to Las Vegas people and to tourists during the excessively hot summer seasons of southern Nevada and for snow sports throughout the winter months. The trees on the mountain have, therefore, an esthetic value sufficiently high to warrant adequate protection against their destruction. An addition to the already heavy recreational use is to be expected upon completion of the road through Lee Canyon that is being extended over the divide beneath Charleston Peak and down Wallace Canyon to connect with Death Valley road on the west side of the mountain. This mountain road will then serve as a connecting link between Boulder Dam and Death Valley.

There is a considerable amount of privately owned lands within the canyon bottoms of Lee and Kyle Canyons particularly. We have had some pressure on the part of private owners for the establishment of sawmills within these two drainages and have been approached by the private owners to make available the national forest timber for prospective sawmilling operations. We have discouraged timber cutting within Kyle and Lee Canyons because we are certain that the trees are most valuable for esthetic purposes. A very small part of the timber has been used for material for campgrounds and other recreational improvements.

A 5% survey covering the entire ponderosa pine and limber pine types on the east side of the mountain in the fall of 1937 indicated about 400 newly attacked trees. No differentiation was made between the insects attacking or the timber types attacked but control operations the following spring (1938) covered all the ponderosa pine type in the canyon bottoms as well as most of the limber pine type on the steep rocky slopes of the mountain.

Our observations show the present infestation divided into two kinds:

1. Black Hills beetle in limber, bristlecone and intermixed ponderosa pine of the upper areas.

2. Round-headed and southwestern pine beetles in the pure ponderosa pine types in the canyon bottoms. A considerable number of logs examined (from which the bark was peeled and burned) showed only the round-headed and southwestern pine beetle (the former greatly outnumbering the latter) in an infestation very similar to that occurring on the Escalante district of the Powell. Black Hills beetles were not found even in newly attacked trees examined the full length of the bole. If there are Black Hills beetles present on this area they are certainly few in number and of minor importance.

Neither of these infestations on the east side of the mountain is out of control since operations during the spring of 1938 were successful in covering all the ponderosa pine areas and the principal infestations in limber pine. Some of the higher limber pine infestations remained untreated at the end of the control period.

About a fourth of the trees found infested with the Black Hills beetle both last year and this year were bristlecone pine. The broods in these trees appeared fully as healthy as those in limber pine and will no doubt emerge since dead bristlecone pine were found from which the Black Hills beetles had emerged.

The infestations occurring on the inaccessible west side of the mountain appear to be similar to those on the east side. There is, however, no indications of spread of infestation from the west of the mountain into the treated areas on the east of the mountain and unless it is demonstrated after the spring of 1939 control operations that such a spread has actually taken place control of the infestation on the west side is not urgent. Attached hereto you will find a small scale map of the Charleston division of the Nevada on which we have indicated the areas mentioned in our foregoing discussion.

Plans have been formulated by the Supervisor and ranger and concurred in by the Division of Timber Management whereby control operations will be continued on the Nevada during the spring of 1939 in an effort to hold the infestation in an endemic stage until such time as natural agencies will reduce the infestation to normal. It is planned that the control work will be done largely by WPA and CCC labor but the Supervisor has requested that we allot the Nevada $300 or $400 for the hire of a foreman who has had experience in insect control work. We are holding a small contingent of P.A M. insect control funds in this office with the hope that we will be able to help out the Nevada as requested.

Western Pine Beetle (D. brevicomis):

The insect situation on the Idaho, Payette, Weiser, and Boise National Forests insofar as the western pine beetle is concerned is considered normal or endemic. Mr. James C. Evenden of the Bureau of Entomology and Plant Quarantine planned to make a reconnaination of the ponderosa pine type on the Weiser and some portions of the Payette but as yet we have not received a report as to his findings. Insect control reports from the several forests, however, indicate that we have no cause for immediate concern in regard to the western pine beetle.

Douglas Fir Beetle (D. pseudotsugae):

While we are able to report a great deal of progress in the control of the many forest insects throughout the Region, we are forced to admit that the Douglas fir beetle has reached an epidemic beyond control. This beetle is represented by scattered epidemics throughout the entire Douglas fir type of the Region.

The Supervisor of the Caribou reports that in his opinion there is a distinct reduction in the number of new attacks within the Douglas fir type but in general most of the Supervisors report that the Douglas fir beetle is steadily working within the Douglas fir type. Close observation by members of the Division of Timber Management and by members of the Bureau of Entomology and Plant Quarantine indicates bad situations on many of the forests. Infestations are particularly bad on the Spencer district of the Targhee, portions of the Cache and also the Uinta. As you know, Douglas fir is much in demand by the local communities in the Intermountain Region and it is most unfortunate such a heavy loss has occurred as a result of the beetle epidemic. In a few isolated cases we have been able to hold the infestations of the Douglas fir beetle in check through sale, administrative use and free use but in general we believe that the infestation is beyond control by artificial measures. The only light of encouragement as far as this beetle is concerned is that its past history indicates that epidemics rise rapidly and also subside rapidly.

Engelmann Spruce Beetle (D. engelmanni):

No new developments within the Region insofar as this beetle is concerned. Reported epidemics on the Lemhi and Powell are apparently subsiding.

White Fir Beetle (Scolytus ventralis):

The Supervisor of the Nevada reports that the infestation previously reported within the white fir stands of the Nevada had subsided due in part at least to the exhaustion of host material. This is true very largely of this beetle throughout the Region.

Turpentine Beetle (D. valens):

The Supervisor of the Idaho Forest reports a slight epidemic within the highly valuable ponderosa pine type adjoining or near some of the resort sites on State land near the Payette Lakes. Some of the private owners of the resort sites have taken action toward control of this beetle.

Douglas Fir Tussock Moth (Hemerocampa pseudotsugata):

By reference to our report for the calendar year 1937 you will note that we reported an infestation of the Douglas fir tussock moth on the Sawtooth. This infestation has increased considerably and has covered at least several 100 acres up to the present time. The infestation has apparently spread eastward 20 miles since it is reported by the Supervisor of the Challis to be present on Fish Creek which is a tributary of Wood River.

During the past summer the Supervisor of the Humboldt reported an infestation of what the ranger tentatively identified as the Douglas fir tussock moth which was working in alpine fir. Specimens of this moth were furnished Dr. Beal for identification since there was apparently some question as to whether or not it might be one of the other closely related species such as Hemerocampa oslari.

Needle Miner:

The Supervisor of the Minidoka reports a widespread infestation of the needle miner (Recurvaria milleri) within the lodgepole pine type on the East and West Cassia Divisions of the Minidoka. Slight infestations of this same needle miner were noted on the Sawtooth during the past summer. We are watching this insect with a great deal of interest and apprehension for we are fearful that its work will so weaken the lodgepole pine stands that such a condition will be conducive to the building up of the mountain pine beetle infestation.

CONCLUSIONS:

We trust that we have given you a broad and comprehensive picture of the forest insect situation within Region 4 and in view of the above described conditions our plans may be summarized as follows:

1. D. monticolae - Continuation of control within the Green River drainage of the Wyoming. Follow-up of control within the limber pine type on the Cache. Elsewhere no control work needed or is not economically or entomologically sound.

2. D. ponderosae - Treatment to a limited extent on the Dixie, Nevada, and Ashley and to a greater extent on the Powell.

3. D. convexifrons and D. barberi - Treatment for the control of these two species where they are working conjointly with Black Hills beetle on the Powell and Nevada.

4. D. pseudotsugae - Treatment by disposal of infested trees where the results obtained will warrant such action through sale, administrative use and free use. In a few instances where the Douglas fir is highly valuable from the recreational standpoint artificial control measures may be instituted through the use of emergency funds. Control work for this beetle should be held to a minimum.

Forms F%-I.C.-1 will be forwarded to your office not later than February 1, 1939 and just as soon as they are received in this office.

Very truly yours,

C. N. WOODS,
Acting Regional Forester.

Encl.
(Map)